10

15

20

## **CLAIMS**

What is claimed is:

1. A homogeneous assay for the determination of deoxynivalenol (DON) in

5 grains, said homogeneous assay comprising the steps of:

extracting DON from a grain sample to provide an extract;

combining said extract with a tracer and an antibody to provide a mixture, said tracer comprising DON conjugated to a fluorophore, said tracer being able to bind to said antibody to produce a detectable change in fluorescence polarization;

measuring the fluorescence polarization of said mixture to obtain a measured fluorescence polarization; and

comparing said measured fluorescence polarization with a characterized fluorescence polarization value, said characterized fluorescence polarization value corresponding to a known DON concentration.

2. The assay of claim 1, wherein said fluorophore is 6-aminofluorescein.

3. The assay of claim 1, further comprising the steps of:

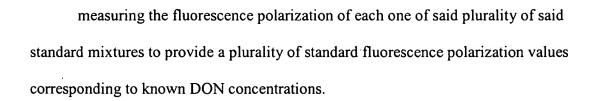
providing a plurality of DON standard solutions, each of said DON standard solutions having a different known concentration of DON;

adding said tracer and said antibody to each one of said plurality of DON standard solutions, so as to provide a plurality of standard mixtures; and

5

10

15



- 4. The assay of claim 3, wherein said characterized fluorescence polarization value is one of said standard fluorescence polarization values.
  - 5. A homogeneous assay for the determination of trichothecenes in grains, said homogeneous assay comprising the steps of:

extracting trichothecene from a grain sample to provide an extract;

combining said extract with a tracer and an antibody to provide a mixture, said tracer comprising a predetermined trichothecene conjugated to a fluorophore, said tracer being able to bind to said antibody to produce a detectable change in fluorescence polarization;

measuring the fluorescence polarization of said mixture to obtain a measured fluorescence polarization; and

comparing said measured fluorescence polarization with a characterized fluorescence polarization value, said characterized fluorescence polarization value corresponding to a known trichothecene concentration.

6. The assay of claim 5, wherein said predetermined trichothecene is deoxynivalenol (DON).

10

15

20

- 7. The assay of claim 6, wherein said fluorophore is 6-aminofluorescein.
- 8. The assay of claim 5, further comprising the steps of:

providing a plurality of trichothecene standard solutions, each of said standard

5 trichothecene solutions having a different known concentration of trichothecene;

adding said tracer and said antibody to each one of said plurality of trichothecene standard solutions, so as to provide a plurality of standard mixtures; and

measuring the fluorescence polarization of each one of said plurality of said standard mixtures to provide a plurality of standard fluorescence polarization values corresponding to known trichothecene concentrations.

- 9. The assay of claim 8, wherein said characterized fluorescence polarization value is one of said standard fluorescence polarization values.
- 10. An assay kit for the determination of deoxynivalenol (DON) content in grains, said assay kit comprising:

an antibody and a tracer, each in an amount suitable for at least one assay, and suitable packaging, said tracer comprising DON conjugated to a fluorophore, said tracer being able to bind to said antibody to produce a detectable change in fluorescence polarization.

11. The assay kit of claim 10, wherein said fluorophore is 6-aminofluorescein.